

2004 | 2004 | 2004 | 2004 | 2004 | 2004 | 2004 | 2004

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

# THE 2004 LAND REPORT



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# The 2004 Land Report

## January 2004 through December 2004

By the Land Protection Division of the Oklahoma Department of Environmental Quality

This report highlights accomplishments in the varied land restoration projects underway at the DEQ. It provides the context for each remediation program, showcases progress on projects, lists the

universe of sites in each program, and provides maps depicting project locations. This report is also available on our website at [www.deq.state.ok.us](http://www.deq.state.ok.us) under the Publications heading.



## Brownfields/Voluntary Cleanup

The Oklahoma Brownfields Voluntary Redevelopment Act was signed into law June 1996. Last year, the federal Small Business Liability Relief Act was passed into law and clarifies liability under Superfund, expands the universe of eligible sites and provides funding for state and tribal programs. The Oklahoma Brownfields Act creates a voluntary program for the redevelopment and reuse of brownfields (contaminated sites) by limiting the liability of property owners, lenders, lessees and successors from DEQ actions. The Brownfields Program provides legal certification that the property has been cleaned up to a level that is appropriate for the planned reuse. The certification clears the participant and any future owners, lenders, lessees, etc., from environmental liability associated with historical contamination. It also provides DEQ's covenant not to sue for environmental problems addressed during the cleanup, and it provides protection from

the federal Superfund program. Low interest loans are available for the cleanup of brownfields sites, and new federal legislation provides grants to communities and non-profit organizations for the assessment and cleanup of brownfields. This option is often chosen when the owner wishes to sell the property or when a lender is concerned about its liability. Several very significant sites have been cleaned up under this program.

The DEQ also operates an informal voluntary cleanup program for those who do not need or desire the protection provided by the Brownfields Program. Sites in the Brownfields Program and informal voluntary cleanup program are being addressed through consent orders, the instrument used to formalize commitments to address the cleanups. The consent orders include reimbursement for DEQ's oversight costs for voluntary cleanups.



*Duncan Refinery Voluntary Cleanup*

## Brownfields/Voluntary Cleanup Sites

### Blackwell Zinc

#### Voluntary Cleanup – NPL Deferral

Blackwell, Kay County

DEQ Contact:

George Thomas  
(405) 702-5126

Status:

Ecological Unit:

Completed 1996

Soil Unit:

Completed 2001

Ground Water Unit:

Remedial Design

The Blackwell Zinc Site was a horizontal-retort smelter that operated from 1916 to 1972. Historical operations resulted in lead, cadmium and zinc contamination in the soils and cadmium and zinc contamination in the ground water.

The soil cleanup was completed in 2001 under a consent order between the DEQ, Phelps Dodge Corporation and the Blackwell Industrial Authority. The ground water will be remediated by extracting the contaminated ground water using a series of pumping wells, removing the metals in an on-site treatment plant and discharging the treated water.

Phelps Dodge is completing the engineering design for the ground water remedy.

This year the Burlington-Northern Sante-Fe Railroad completed soil investiga-

tions on railroad properties in the Blackwell area. The data will be compiled in a report and submitted to the DEQ. The report will identify areas on the railroad's property that require cleanup.

### Boynton Refinery

#### Voluntary Cleanup

Boynton, Muskogee County

DEQ Contact:

Scott Stegmann  
(405) 702-5118

Status:

Site Characterization

This 48-acre site operated as a petroleum refinery from 1917 until it was abandoned in 1933. The refinery produced a variety of oil products including paraffin wax, motor oil, gasoline and kerosene. Waste areas at the site include a large tar pit, several smaller pits containing refinery waste and other assorted waste areas. Marathon Oil, through a consent order with the DEQ, has agreed to conduct a Site Characterization of the former refinery. Preliminary Site Characterization work was conducted in September 2004, including a stratigraphic survey and determining site ground water conditions. Site Characterization will continue in 2005. Once characterization is completed, Marathon and DEQ will evaluate options for site cleanup and reuse.



## Duncan Refinery Voluntary Cleanup

Meridian, Stephens County

DEQ Contact:

Amy Johnson

(405) 702-5133

Status:

Interim Action &

Remedial Investigation

ConocoPhillips, Stephens County and the DEQ signed an agreement in April 2003 to investigate and clean up this 400-acre inactive refinery, located five miles south of Duncan. It operated from the 1920s until 1983. The refinery was never properly closed, leaving many serious environmental problems. These included oil and chemicals seeping into the creek, deteriorating vessels containing a range of waste materials, waste pits, oily wastewater ponds and significant amounts of badly deteriorated asbestos.

ConocoPhillips is currently working with the DEQ to mitigate oil and chemical seeps to Clarity Creek. ConocoPhillips has also completed a survey of the asbestos at the refinery and performed a preliminary investigation of the Hydrofluoric Unit. Additional actions and a more complete investigation of the interior of the site are underway.



*The Coker structures at the Duncan Refinery.*



*Installing a cut-off trench at the Duncan Refinery.*



## Federated Metals Cimarron Center Brownfields

Sand Springs,  
Tulsa County  
DEQ Contact:  
Ray Roberts  
(405) 702-5137  
Status:  
Remediation Complete

### CIMARRON CENTER WINS REGIONAL PHOENIX AWARD™

The Cimarron Center Redevelopment Project in Sand Springs, Oklahoma has been awarded the 2004 Regional Phoenix Award™. The award honors individuals and groups that transform abandoned industrial sites into productive new uses. The Cimarron Center was built on the location of the Federated Metals former zinc smelter. Kucharski Development Company partnered with Federated Metals to clean up the site and redevelop it into a center of commerce for the community of Sand Springs. Several retail stores including a Wal-Mart Super Center have opened at the Cimarron Center.

## Cimarron Center

A Wal-Mart Super Center

350 new jobs — retained 300 jobs

Expected gross sales of \$80 million in its first year and to top \$100 million by 2008.

Projected more than \$3.5 million a year in city sales tax revenues.

Other Stores  
Eyemart Express  
Quick Trip

The award was presented to Kucharski Development at a special ceremony at the 2004 Brownfields Conference.

The Cimarron Center is located at the intersection of U.S. Highway 64/412 (the Sand Springs Expressway) and State Highway 97.

The project's nomination for the Phoenix Award was based on the positive economic impact that the project brought to Sand Springs. The site was cleaned up under the authority of the Oklahoma Department of Environmental Quality's Voluntary Cleanup and Brownfields Redevelopment Program.





*Bottom, left to right – Kathy and Robert Kucharski (Kucharski Development) and Richard Greene (Regional Administrator, EPA Region 6) Top, left to right – Rita Kottke, Ph.D. (DEQ Brownfield Coordinator), Mayor Mike Burdge (Mayor of Sand Springs), and Terry Walters (Sand Springs Economic Development Director)*



*The award trophy is a hand-crafted crystal flame with gold flames.*

## Phoenix Award

Created in 1997 to honor the groups that develop significant brownfields sites across the country.

An independent panel of environmental professionals and business, academic and government leaders select the winners.

Seeks to recognize innovative yet practical remediation projects, which bring blighted, old commercial and industrial sites back to productive use.

### M-D Products Voluntary Cleanup

4041 N. Santa Fe  
Oklahoma City,  
Oklahoma County  
DEQ Contact:  
Ray Roberts  
(405) 702-5137  
Status:  
Site Investigation

M-D Products is an active manufacturing facility. M-D entered into a consent agreement with the DEQ on October 29, 2001 to investigate ground water contamination by chlorinated solvents and free phase mineral spirits. Interim measures are being undertaken to recover mineral spirits. A dozen new monitor wells were recently installed. Site investigation to delineate the extent of contamination continues.

### Michelin North America Former B.F. Goodrich Tire Plant

Miami, Ottawa County  
DEQ Contact:  
Ray Roberts  
(405) 702-5137  
Status: Remedial Design

The former B.F. Goodrich Tire Plant operated from the 1940s until 1983. Michelin entered into a consent order for investigation and remediation in October 1997. The site has subsequently been investigated. Follow up is being done on a benzene plume that has gone beneath a residential area near the plant. Michelin is developing a remedial plan for the contaminated ground water.

## Ottawa Management Corporation – Former B.F. Goodrich Tire Plant

Miami, Ottawa County

DEQ Contact:

Ray Roberts

(405) 702-5137

Status: Remediation

The former B.F. Goodrich Tire Plant operated from the 1940s until 1983. Ottawa Management Corporation, as the current owner, is under a court order from the Ottawa County Court to perform an asbestos abatement on the 30-acre building. A large portion of the facility has been abated; however, a significant area inside the plant remains to be abated.



*Sampling at the B.F. Goodrich Plant*

## Pure Oil Refinery Voluntary Cleanup

Ardmore, Carter County

DEQ Contact:

Kendel Posey

(405) 702-5120

Status: Investigation  
and Interim

Remedial Actions

The 70-acre former Pure Oil refinery, located in the northeast portion of Ardmore, in Carter County, operated from approxi-

mately 1916 until 1936. Union Oil of California acquired Pure Oil Company in 1965. The former refinery consisted of a refining process area surrounded by above ground storage tanks that contained fuel oil, benzene butts, gas oil, refined oils, stripped crude, crude oil and gasoline. Early maps show a pond on the southeast portion of the site, which is still visible today. Two coke piles remain on the southeastern boundary of the property.

Clean up work for 2003-2004 focused on the removal of: the concrete sump and 32 tons of non-hazardous waste; a separator with 189.5 tons of soil and petroleum material; sub-grade wooden and brick structures and an area of solidified petroleum material. To date 733 tons of non-hazardous waste have been removed, with approximately 1,200 tons of hazardous waste left in place which will be cleaned up in 2005.



*Clean up at the Pure Oil Refinery in Ardmore*

## ELIGIBLE TARGETED SITE ASSESSMENTS PROPERTIES

- are abandoned or publicly owned
- have low to moderate contamination
- have a prospective purchaser willing to buy and pay for the cleanup of the property



*Sampling during a Targeted Site Assessment*



*Chilocco Targeted Assessment Site*

## BROWNFIELDS TARGETED SITE ASSESSMENTS

DEQ's Brownfields Targeted Site Assessment program is designed to help non-profit entities, tribes, and municipalities identify contamination to help promote cleanup and redevelopment of brownfields. Once contamination at a site is assessed, redevelopment is made easier.

DEQ provides technical assistance for environmental assessments at brownfields sites under a Brownfields Assistance Agreement with the U.S. Environmental Protection Agency. A Targeted Site Assessment may encompass one or more of the following activities:

- A background and historical investigation and a preliminary site inspection;
- A full environmental assessment, including sampling to identify the contaminants and areas to be cleaned; and
- Establish cleanup options and costs for future uses and redevelopment.

The Brownfields Law made additional properties eligible for this funding, including mine-scarred land, properties contami-

nated by a controlled substance and petroleum-contaminated properties of relatively low risk.

The program does not provide funds to conduct cleanup or building demolition activities. The costs of these assessments are usually anywhere from \$10,000 to \$20,000.

For More information  
Contact Hal Cantwell at (405)  
702-5139





*Sampling an old dry cleaner*



*Sampling at an abandoned refinery*



*Sampling a waste storage tank*

**DEQ HAS PERFORMED TARGETED  
SITE ASSESSMENTS STATEWIDE:**

Woodward	Sulphur
Keyes	Newcastle
Grandfield	Muskogee
Chilocco	Oklahoma City
Kaw City	Sand Springs
Bethel Acres	Ardmore
Frederick	Chickasha
Medicine Park	

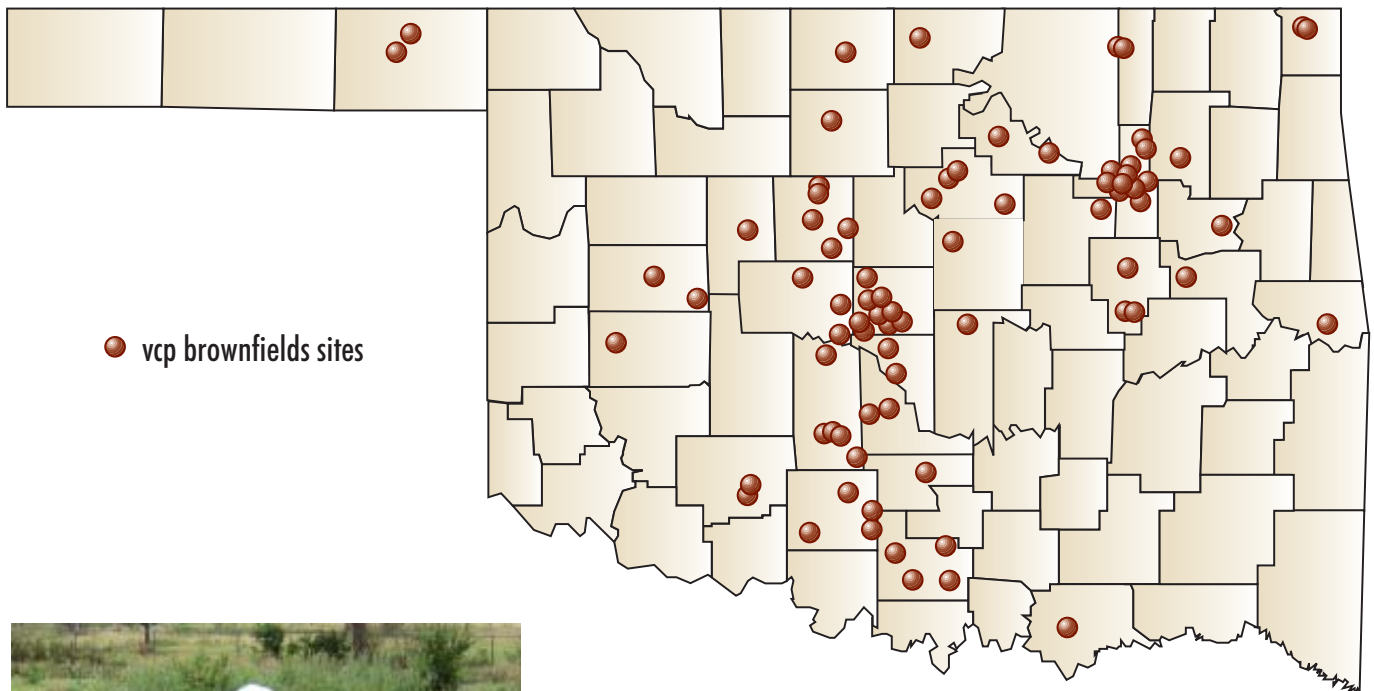
## Additional Brownfield/Voluntary Cleanup Sites

Numerous other sites are undergoing Brownfield/Voluntary cleanups. Information is available from the DEQ Contact

Site Name	Proj Mgr	Phone #	Site Name	Proj Mgr	Phone #
Adolf's Conv. Store/Tim McFarl	Replogle, Robert	702-5131	Harcros Chemicals	Replogle, Robert	702-5131
Altec Lansing/Telex Comm.	Replogle, Robert	702-5131	Home Depot/Emerson	Replogle, Robert	702-5131
Baker Petrolite	Posey, Kendel	702-5120	Howard Drilling(OCC-1006)	Replogle, Robert	702-5131
Beaulieu of America	Posey, Kendel	702-5120	Imation Enterprises Corp (3M)	Posey, Kendel	702-5120
BF Goodrich/Ottawa Mgmt Co	Roberts, Ray	702-5137	Kelne property	Stegmann, Scott	702-5118
Blackwell Zinc	Thomas, George	702-5126	Kerr McGee Cleveland	Roberts, Ray	702-5137
BNSF/(Burk/Bales)/Phillips Pet.	Roberts, Ray	702-5137	Kerr McGee Cushing	Thomas, George	702-5126
Carlisle Coatings/Quaker	Lyon, Amil	702-5140	Koch Hydrocarbon, LP	Stegmann, Scott	702-5118
Casady Square/MVP Part.	Roberts, Ray	702-5137	Koch Ind./Custer City	Keck, Jarrett	702-5121
City of Lawton	Keck, Jarrett	702-5121	Koch Ind./El Reno	Keck, Jarrett	702-5121
Claremore, City of	Keck, Jarrett	702-5121	Kodak Polychrome Graphics	Posey, Kendel	702-5120
Collinsville smelter/Cyprus Amax	Thomas, George	702-5126	Kusa/ASARCO	Stegmann, Scott	702-5118
Coltec Ind./Federated Metals	Roberts, Ray	702-5137	Marathon Oil/Boynton	Stegmann, Scott	702-5118
Dollar 75/MVP	Roberts, Ray	702-5137	M-D Building Products	Roberts, Ray	702-5137
Duke Energy-Carney GP	Johnson, Dale	702-5122	Michelin/BFG	Roberts, Ray	702-5137
Duke Energy-Cashion GP	Johnson, Dale	702-5122	Midwest City/MidAmerica Mall	Posey, Kendel	702-5120
Duke Energy-Crescent CS	Johnson, Dale	702-5122	Mobil Chem/Midwest Films	Lyon, Amil	702-5140
Duke Energy-Dibble CS	Stegmann, Scott	702-5118	National Zinc	Datin, Dennis	702-5125
Duke Energy-Goldsby GP	Keck, Jarrett	702-5121	Normandy Creek	Posey, Kendel	702-5120
Duke Energy-Hennessey GP	Johnson, Dale	702-5122	Norris Sucker Rod Plant	Lyon, Amil	702-5140
Duke Energy-Moore CS	Stegmann, Scott	702-5118	OCURA//City of OKC	Johnson, Dale	702-5122
Duke Energy-Mustang GP	Johnson, Dale	702-5122	OKC-S. Canal Landcell	Johnson, Dale	702-5122
Duke Energy-S. Cashion CS	Johnson, Dale	702-5122	Okla. State Univ. burial site	Davis, Paul	702-5132
Duke Energy-S. Mustang CS	Johnson, Dale	702-5122	Okmulgee Refinery/Phillips	Roberts, Ray	702-5137
EMC Test Systems/Emerson	Johnson, Dale	702-5122	Omni Servs/Western Uniform	Johnson, Dale	702-5122
Epperly/Mr. Keens Cleaners	Roberts, Ray	702-5137	Omni Servs/Western Uniform	Johnson, Dale	702-5122
ExxonMobil-Bradley CS	Johnson, Dale	702-5122	Omni Servs/Western Uniform	Johnson, Dale	702-5122
ExxonMobil-Bumpass CS	Johnson, Dale	702-5122	Owasso Land Trust	Replogle, Robert	702-5131
ExxonMobil-Dover/Hennessey	Stegmann, Scott	702-5118	Pilchers Lakewood Shpng Ctr.	Keck, Jarrett	702-5121
ExxonMobil-Doyle CS	Johnson, Dale	702-5122	Sand Springs Home	Keck, Jarrett	702-5121
ExxonMobil-E. Hewitt CS	Johnson, Dale	702-5122	Southern Specialties Corp.	Replogle, Robert	702-5131
ExxonMobil-Fox CS	Johnson, Dale	702-5122	Stillwater Regional Airport	Lyon, Amil	702-5140
ExxonMobil-Hughes CS	Johnson, Dale	702-5122	Summit Machine Tool/Seagate	Lyon, Amil	702-5140
ExxonMobil-S. Chitwood GP	Johnson, Dale	702-5122	Tosco/ConPhil/Duncan Refry.	Johnson, Amy	702-5133
ExxonMobil-Sholem Alec. GP	Johnson, Dale	702-5122	Trumbull Asph/Owens Corning	Stegmann, Scott	702-5118
ExxonMobil-W. Chitwood CS	Johnson, Dale	702-5122	Unarco/Thorco	Keck, Jarrett	702-5121
Facet International	Replogle, Robert	702-5131	Union Oil Co. of California	Posey, Kendel	702-5120
Farmland Industries	Roberts, Ray	702-5137	Union Pacific	Cates, David	702-5124
Federated Metals	Roberts, Ray	702-5137	US Zinc/ASARCO	Stegmann, Scott	702-5118
Halliburton Services	Roberts, Ray	702-5137	Yale Cleaners #4	Keck, Jarrett	702-5121
Halliburton Services	Roberts, Ray	702-5137			

See map on page 14 for locations of these sites. For specific information, please contact the DEQ staff member listed to the right of each site in the list above.

## VCP Brownsfields Sites Map 1



*Sampling during a Targeted Site Assessment*

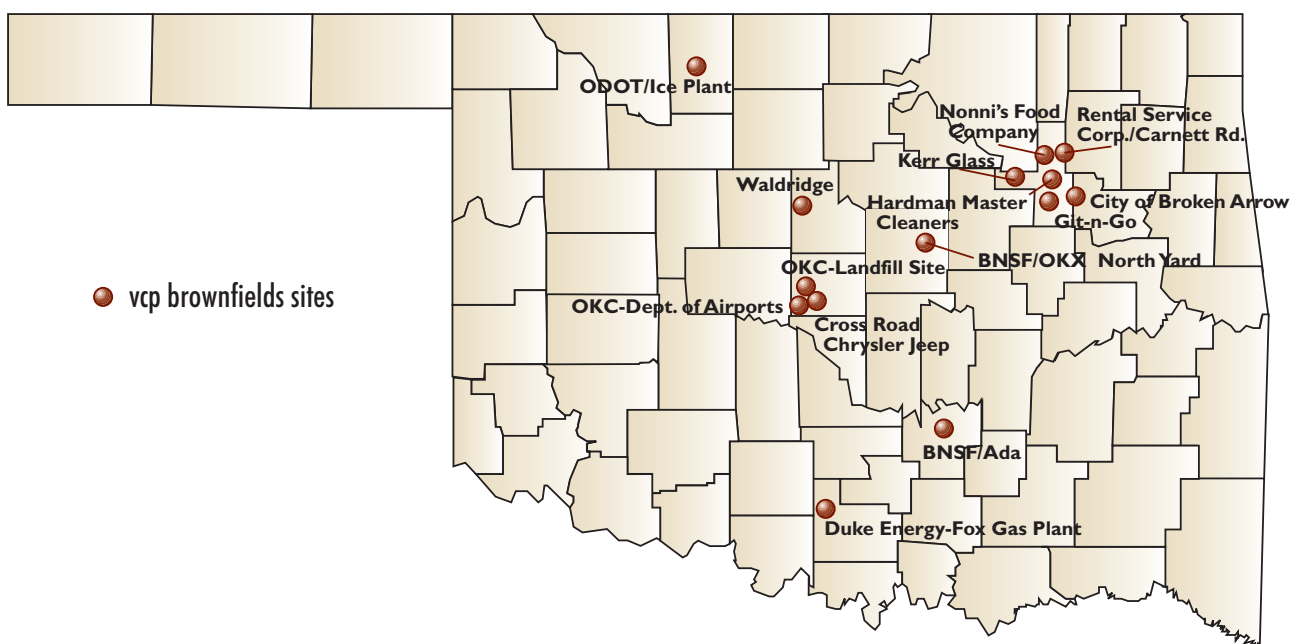


*Installing a monitor well for a Targeted Site Assessment*



## Map of Brownfield/Voluntary Cleanup Sites completed in 2004

### VCP Brownfields Sites Map 2



## Brownfield/Voluntary Cleanup Sites completed in 2004

Site	Location	Contact
BNSF/OKX North Yard	Oklahoma City	Jarrett Keck (405) 702-5121
Git-n-Go	Tulsa	Robert Replogle (405) 702-5131
City of Broken Arrow	Broken Arrow, Wagoner Co.	Jarrett Keck (405) 702-5121
OKC-Dept of Airports	Oklahoma City	Jarrett Keck (405) 702-5121
Nonni's Food Company	Tulsa.	Amil Lyon (405) 702-5140
Duke Energy-Fox Gas Plant	Carter Co.	Jarrett Keck (405) 702-5121
Hardman Master Cleaners	Tulsa	Jarrett Keck (405) 702-5121
ODOT/Ice Plant	Cherokee, Alfalfa Co.	Jarrett Keck (405) 702-5121
Kerr Glass	Sand Springs	Dennis Datin (405) 702-5125
Waldrige	Crescent, Logan Co.	Dennis Datin (405) 702-5125
BNSF/Ada	Ada	Jarrett Keck (405) 702-5121
Cross Road Chrysler Jeep	Oklahoma City	Jarrett Keck (405) 702-5121
OKC-Landfill Site	Oklahoma City	Jarrett Keck (405) 702-5121
Rental Service Corp./Garnett Rd.	Tulsa	Jarrett Keck (405) 702-5121

## Resource Conservation and Recovery Act (RCRA)

The 1976 Resource Conservation and Recovery Act (RCRA) was the nation's first comprehensive hazardous waste management law. It created a regulatory system that governed the treatment, storage and disposal of hazardous waste and has subsequently been delegated to the State by the federal government. RCRA has been amended several times, and for the most part, addresses land disposal of hazardous waste and corrective action.

### Chief Supply/Greenway Environmental RCRA Cleanup Site

Stone Bluff,  
Wagoner County  
DEQ Contact:  
Cindy Hailes  
(405) 702-5114  
Status: Closure

In 2004, the EPA and DEQ worked together to conduct removal activities at

this former hazardous waste treatment, storage and disposal facility. The 19-acre facility operated as Chief Supply between 1984 and shut down in 1997 following a fatal explosion and fire at the facility. In 1997, the bankruptcy court awarded Greenway Environmental Inc., control of the facility. Greenway operated the facility until 2000 when the operational permit was relinquished and the site was abandoned with hazardous waste onsite.

The removal action conducted in 2004 disposed of all hazardous waste at the abandoned site. Equipment, including large reactors, were emptied of contents, dismantled and shipped offsite for disposal. Federal EPA dollars and a portion of the \$175,000 settlement between the DEQ and Chief Supply's insurance company funded the removal.

DEQ is evaluating work remaining for closure and post-closure care of this facility.



*Demolishing a reactor vessel at Chief Supply/Greenway*

## Clean Harbors Lone Mountain RCRA Generator Cleanup Site

Major County  
DEQ Contact:  
Sam Ukpaka  
(405) 702-5148  
Status:  
Active Remediation

Clean Harbors in Lone Mountain is a commercial facility that treats, stores and disposes of hazardous and non-hazardous wastes generated in the United States. This facility has been in operation for 26 years. DEQ permits and provides regulatory oversight of this facility.

In addition to ongoing ground water remediation of a disposal cell, this year the facility investigated another disposal cell for the release of volatile organic compounds. The investigation will help determine what, if any, response is required.

## Conoco, Ponca City Refinery RCRA Generator Cleanup Site

Ponca City, Kay County  
DEQ Contact:  
J. David Lawson  
(405) 702-5104  
Status:  
Operation and  
Maintenance

The Conoco Ponca City Refinery, located along the southern edge of Ponca City, includes a petroleum refinery, a corporate research and development operation, bulk petroleum storage operations, and a management services organization. This site has been used for petroleum refining since the early 1900s. As a result of past practices, the site has an underground plume of petroleum product and contaminated ground water. RCRA facility investigations identified several areas that needed to be cleaned up.

The refinery is working to contain and recover the underground petroleum product plume and to remediate contaminated ground water using over 400 ground water monitoring wells and by pumping the hydrocarbons and ground water to the surface. Over 4,500 barrels of material were recovered in 2004. Several years of investigation have resulted in “no further action” findings for many refinery waste units. Recovery and treatment of the hydrocarbon plume and contaminated ground water will continue.

## Old Enid Refinery RCRA Generator Cleanup Site

Enid, Garfield Co.  
DEQ Contact:  
Hillary Young  
(405) 702-5106  
Status: Investigation

The Old Enid Refinery operated between 1916 and the mid-1980s. Ownership changed over the years and the Anadarko Petroleum Corporation now owns the property. Today, most of the area where the refinery once stood is a grassy meadow.

Over the years, periodic spills and leakage from the refinery contaminated the soils and ground water beneath the facility. An oil recovery system removed liquid petroleum from the ground water for a ten-year period and routine ground water sampling has been ongoing.

In 2003, the DEQ Land Protection Division reviewed existing data and decided that more investigation was needed to get a “snapshot” of current conditions over a larger area, including offsite properties. In November of 2003, the DEQ and Anadarko cooperated on sampling some 50 monitoring and private water wells in areas to the north and south of the refinery property. Anadarko has done pilot testing and is now conducting soil vapor sampling to determine if there might be impacts to indoor air quality from the contaminated ground water that has migrated off-site.



## Sun Company, Inc. Sunoco R&M RCRA Generator Cleanup

Tulsa

DEQ Contacts:

Don Hensch

(405) 702-5152

Status:

Investigation and Monitoring

This refinery, located on the banks of the Arkansas River, has operated since 1913. The site covers over 800 acres, operates 24 hours a day, and employs approximately 700 people. The refinery is an integrated complex with a crude oil capacity of 90,000 barrels per day. Crude oil is refined into a variety of petroleum products. The bulk of the hazardous waste that is generated is managed in the wastewater treatment process. The refinery also generates tank bottoms and some solvent wastes in the maintenance and electrical shops.

Sun has worked under DEQ permits to use land treatment for the onsite disposal of both hazardous and non-hazardous wastes. Sunoco has an extensive free phase hydrocarbon plume on the groundwater below the facility. Additional information on groundwater has been submitted and is under review by the DEQ. Sunoco has performed several focused investigations on older disposal areas and is cleaning up these older disposal sites to formally close them. This work is planned to continue

through 2006. The DEQ is currently in the process of reviewing the status of a Sun Permit Renewal Application.

## Tinker Air Force Base RCRA Program

Oklahoma City,

Midwest City & Del City

DEQ Contacts:

Robert Replogle

(405) 702 5131

Status: Investigation  
and Cleanup

Tinker Air Force Base (TAFB) has completed most of the requirements of a RCRA Facility Investigation. The soil clean up is complete, and a separate investigation of ground water under the entire facility is taking place. Several waste management units have been cleaned up. All Base landfills have been closed and covered with caps. A complex ground water recovery system in the southwest quadrant of the base impedes the movement of contaminated ground water.

In response to the discovery of contaminated ground water offsite in November 2000, Tinker initiated a plan to provide residents of a neighborhood to the southwest with connections to public water. The Air Force selected a new, innovative technology for the clean up of the contaminated ground water.

In May 2004, the Base awarded GeoSierra, LLC, the contract to construct a permeable reactive barrier. GeoSierra has developed a trenchless, deep permeable reactive barrier technology that is much less destructive to the surface and produces a fraction of potentially hazardous excavated soil to be disposed of compared to conventional trenching. The barrier was completed in August 2004.

Tinker continues to remediate ground water at various waste management sites on the Base. Several sites have completed restoration work under RCRA this year including a former fire training area, an old fuel tank, a closed sludge lagoon and a former waste pit.

### Zinc Corporation of America RCRA Generator Cleanup Site Bartlesville,

Washington County

DEQ Contact:

J. David Lawson

(405) 702-5104

Status: Active Remediation

The Zinc Corporation of America zinc refinery in Bartlesville accomplished a major milestone this year. The DEQ accepted the certifications of closure on October 19, 2004, eleven years after work began to close the facility.

Historical operations at this metals refining facility resulted in contamination of several areas. The clean up consisted of consolidating and capping the wastes onsite. Now that the closure is complete, the facility will maintain the cap and monitor the ground water.

Several areas of this formerly contaminated facility are being used by other businesses.



*The Zinc Corporation of America site after clean up*



## Additional RCRA Generator Cleanup Sites

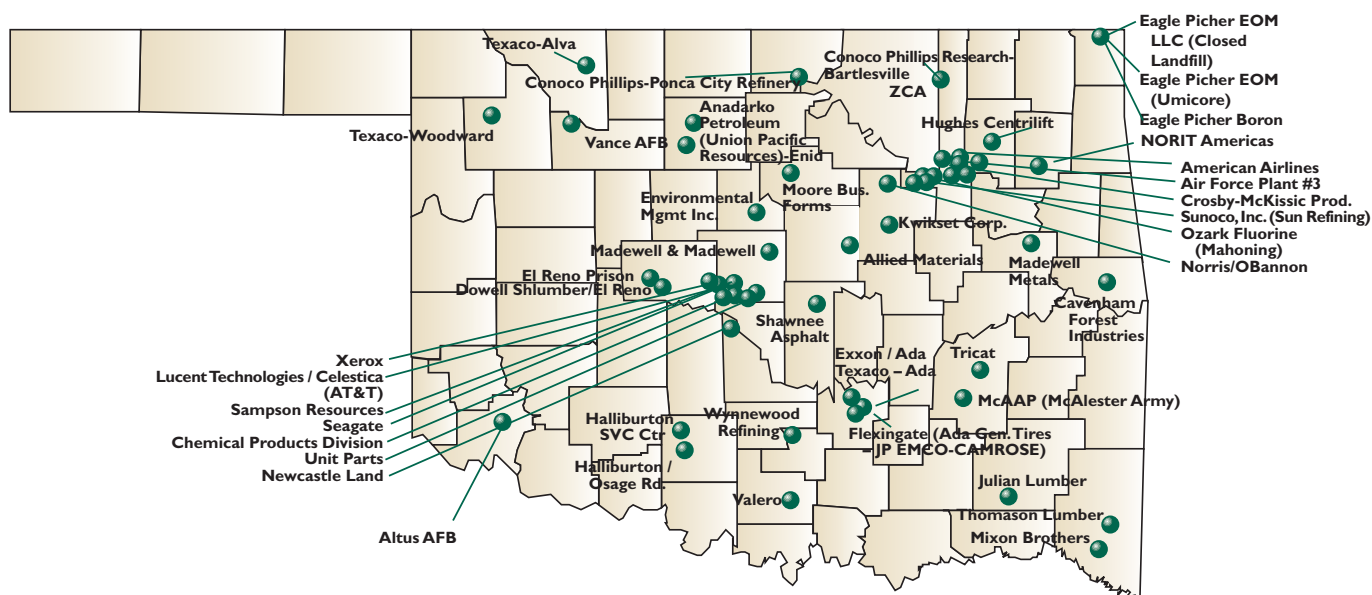
There are numerous other sites undergoing generator cleanups.

Project Name	Project Manager	Phone
Air Force Plant #3 - Tulsa	Replogle, Robert	702-5131
Allied Materials - Stroud	Young, Hillary	702-5106
Altus AFB - Altus	Replogle, Robert	702-5131
American Airlines - Tulsa	Hensch, Don	702-5152
Anadarko Petroleum (Union Pacific Resources) - Enid	Young, Hillary	702-5106
Ashland Chemical - Tulsa	Hensch, Don	702-5152
Boeing (Rockwell International) - Tulsa	Lawson, David	702-5104
Cavenham Forest Industries - Sallisaw	Zaidi, Askari	702-5145
ChemCentral - Tulsa	Zaidi, Askari	702-5145
Chemical Products Division - OKC	Ukpaka, Sam	702-5148
Chickasha Manufacturing - Chickasha	Ukpaka, Sam	702-5148
Clean Harbors (Safety-Kleen/HRI) - Tulsa	Lawson, David	702-5104
Clean Harbors-Lone & Grassy Mtn. - Waynoka (Laidlaw/USPCI/Safety Kleen)	Ukpaka, Sam	702-5148
Commercial Distributing, Inc. (CDI) - Sapulpa	Young, Hillary	702-5106
ConocoPhillips - Ponca City Refinery	Lawson, David	702-5104
ConocoPhillips Research - Bartlesville	Lawson, David	702-5104
Crosby-McKissic Prod. - Tulsa	Ukpaka, Sam	702-5148
Dowell Schlumbe - El Reno	Hensch, Don	702-5152
Eagle Picher EOM - (Umicore)- Quapaw	Zaidi, Askari	702-5145
Eagle Picher/Boron - El Reno	Zaidi, Askari	702-5145
El Reno Prison - El Reno	Hensch, Don	702-5152
Environmental Mgmt, Inc - Guthrie	Young, Hillary	702-5106
Envirosolve - Tulsa	Young, Hillary	702-5106
Exxon - Ada	Zaidi, Askari	702-5145
Flexingate (Ada Gen. Tires-JP EMCO-CAMROSE) - Ada	Young, Hillary	702-5106
Gemini Coating - El Reno	Hensch, Don	702-5152
GEO Holdings - OKC	Lawson, David	702-5104
Greenway (Chief Chemical) - Stone Bluff	Hailes, Cindy	702-5114
Halliburton SVC Ctr - Duncan	Lawson, David	702-5104
Halliburton/Osage Rd - Duncan	Hensch, Don	702-5152
Hudson Refining -Cushing	Replogle, Robert	702-5131
Huffman Wood - Broken Bow	Hensch, Don	702-5152
Hughes Centrilift - Claremore	Zaidi, Askari	702-5145
Interstate Metals - OKC	Ukpaka, Sam	702-5148
Julian Lumber - Rattan	Hailes, Cindy	702-5114
Koch Hydrocarbons, LP - Medford	Scott Stegman	702-5118
Kwikset Corp - Bristow	Young, Hillary	702-5106
Lucent Technologies/Celestica (AT&T) - OKC	Hailes, Cindy	702-5114
Madewell & Madewell - Jones	Ukpaka, Sam	702-5148
McAAP(McAlester Army) - McAlester	Lawson, David	702-5104
Mixon Bro. - Idabel	Hailes, Cindy	702-5114
Moore Bus. Forms - Stillwater	Hailes, Cindy	702-5114
Newcastle Land - Newcastle	Zaidi, Askari	702-5145



## Resource Conservation and Recovery Act (RCRA) Sites

### Resource Conservation and Recovery Act (RCRA) Sites



Project Name	Project Manager	Phone
NORIT Americas, Inc. Pryor Plant (Elf Atochem) - Pryor	Lawson, David	702-5104
Ozark Fluorine (Ozark Mahoning) - Tulsa	Zaidi, Askari	702-5145
Perma-Fix (CRT/RTI) - Tulsa	Ukpaka, Sam	702-5148
Safety Kleen Systems - Tulsa	Young, Hillary	702-5106
Safety Kleen Systems - Wheatland	Young, Hillary	702-5106
Sampson Resources - OKC	Hensch, Don	702-5152
Seagate - OKC	Zaidi, Askari	702-5145
Shawnee Asphalt - Shawnee	Ukpaka, Sam	702-5148
Sinclair - Tulsa	Young, Hillary	702-5106
Sunoco, Inc. (Sun Refining) - Tulsa	Hensch, Don	702-5152
Terra Nitrogen (Verdigris Plant) - Catoosa	Hensch, Don	702-5152
Texaco- Ada	Zaidi, Askari	702-5145
Texaco - Alva	Zaidi, Askari	702-5145
Texaco - Woodward	Zaidi, Askari	702-5145
Barrett/Thomas Refinery - Thomas	Hensch, Don	702-5152
Thomason Lumber - Broken Bow	Hailes, Cindy	702-5114
Tinker AFB - MWC	Replogle, Robert	702-5131
Tricat - McAlester	Young, Hillary	702-5106
Unit Parts - OKC	Hensch, Don	702-5152
Valero (TPI, Total Petroleum) - Ardmore	Zaidi, Askari	702-5145
Vance AFB - Enid	Hensch, Don	702-5152
Wall Colmonoy - OKC	Hensch, Don	702-5152
Wynnewood Refining - Wynnewood	Young, Hillary	702-5106
Xerox - OKC	Hensch, Don	702-5152
ZCA - Bartlesville	Lawson, David	702-5104

## National Priorities List (NPL) – Superfund

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), or Superfund, was enacted in 1980. It created a large-scale national program to identify and clean up sites contaminated from previous hazardous waste management practices. This effort is known as Superfund because CERCLA established a national trust fund to pay for cleanup at sites whose owners were no

longer available or financially solvent. CERCLA also established a mechanism to recover cleanup costs from potentially responsible parties (PRPs).

Thirteen sites in Oklahoma are on EPA's national priorities list (NPL). Sites on the national priorities list are often referred to as Superfund sites. The DEQ is the designated lead agency for remediation activities on five of these Superfund sites.



*Remains of the catalytic cracker at ORC*



*Refinery wastes*

## Double Eagle Refinery NPL-Superfund

Oklahoma City

DEQ Contacts:

Amy Johnson

(405) 702-5133,

Dennis Datin

(405) 702-5125

Status:

Source Control:

Remedial Action complete

Groundwater:

Remedial Action ongoing

These two Superfund sites are contiguous property in south central Oklahoma City. Both operated as oil re-refiners over many years, one beginning in 1929 and the other in 1940. Because the sites share common ground water monitoring wells, they are listed here together.

Historical operations resulted in widespread deposition of residual waste, mostly in pits, on both sites. These pits were generally acidic tar sludges with high lead concentrations. On both sites, the acidic sludges were neutralized, stabilized and disposed of in an off-site landfill. The excavated areas were filled with clean soil and vegetated. The surface is considered clean and available for reuse.

## Fourth Street Refinery NPL-Superfund

Oklahoma City

DEQ Contacts:

Amy Johnson

(405) 702-5133,

Dennis Datin

(405) 702-5125

The ground water in the alluvial and shallow Garber-Wellington aquifers under the site are contaminated with chlorinated solvents, hydrocarbons and metals from the refining operations. DEQ sampled the 13 wells for five years to establish background and last year completed three years of semi-annual monitoring.

At the end of 2004, DEQ drilled additional shallow wells and sampled the ground water to identify possible off-site contaminant sources and to evaluate vapor intrusion as a possible pathway for contamination. This area is part of Oklahoma City's Empowerment Zone, which is in part a local, state, and federal initiative to allow for redevelopment. The results of the sampling will assist all parties in developing appropriate reuse and long-term monitoring strategies.





## Hudson Refining NPL Site - Superfund

Cushing, Payne County

DEQ Contact:

Amy Johnson

(405) 702-5133

Status:

Remedial Investigation/Feasibility  
Study

The 200-acre Hudson Oil Refining Company was active from 1922 to 1982 and produced liquid propane gas, gasoline, diesel fuel, fuel oils, and coke. The refinery was not properly closed and various chemicals were left onsite, including 6,000 gallons of anhydrous hydrofluoric acid. EPA conducted several emergency response actions at the site to remove an abandoned

laboratory, various chemicals, hydrofluoric acid and asbestos. EPA also demolished the refinery superstructure and removed tanks and their contents.

Starting in July of 2004, the DEQ began site-wide investigations of the soil, sediment, surface water, air and ground water. This first phase of investigation concluded in October 2004.

The data gathered will be compiled by the consultant in a report for the DEQ in January 2005. These results will be used to identify risks to human health and the environment and will help DEQ formulate alternatives for cleanup. From these alternatives, a proposed remedy will be selected and will be available for public comment and review.

The DEQ holds periodic public meetings on progress and activities at the site. Site documents are available to the public at the Cushing Public Library.

THE SITE RECEIVED THE USEPA  
REGION 6 ADMINISTRATOR'S STRA-  
TEGIC ALLIANCE AWARD IN 2003.



*Air Samplers at  
Hudson*



*Sampling a pond at the  
Hudson Superfund site*



*Installing  
monitor wells at  
the Hudson  
Superfund site*



*Checking a core sample*



*Sampling monitor well at the Hudson site*



*The Imperial Refinery taken in the early years of the last century*

## Imperial Refining Company NPL Site - Superfund

Ardmore, Carter County

Contact:

Angela Brunsmann

(405) 702-5135

Status:

Remedial Investigation /Feasibility  
Study

The Imperial Refining Company is an 80-acre abandoned crude oil refinery located on both sides of State Highway 142 in east Ardmore. Imperial operated from 1917 to 1924. All tanks and storage equipment were dismantled by 1948. Numerous waste pits, waste piles and water impoundments are contaminated with metals and

hydrocarbons and have impacted an adjacent wetland. The site was listed on the National Priorities List (Superfund) in July 2000. Since then the DEQ has been working with the EPA, the Agency for Toxic Substances and Disease Registry and the U.S. Fish and Wildlife Service to develop investigative strategies.

In September 2004, at DEQ's request, the EPA installed a perimeter fence to limit access to the wastes on site. DEQ is hiring a consultant to perform a site-wide investigation that will assess the risk to human health and the environment and will help determine alternatives for cleanup. The investigation should begin in January 2005. DEQ will hold periodic public meetings to keep the community informed of work and progress at the site.



*Waste in a creek at the Imperial Refining site*





*ORC North - Refinery after demolition*



*ORC North - Refinery before demolition*

## Oklahoma Refining Company (ORC)

### NPL Site - Superfund

Cyril, Caddo County  
DEQ Contact ORC South  
Angela Brunsmann  
(405) 702-5135

DEQ Contact ORC North:  
Ray Roberts (405) 702-5137

### **ORC South**

Status: Remedial Action

### **ORC North**

Status: Emergency Removal

ORC is a 220-acre abandoned oil refinery that operated from 1908 to 1984. Petroleum related contamination of soil, sediment and shallow ground water resulted from leaking tanks, product lines, pits and impoundments.

### **ORC South:**

The site was placed on the National Priorities List in February 1990. The remedy, completed in 2002, included bioremediation, in-situ stabilization, neutralization and disposal in onsite landfills. The ground water remedy was postponed until the source remedial action was complete. DEQ and EPA are evaluating the next steps for ground water monitoring and remediation.



### ORC North:

Until September 2002, the north portion of the ORC refinery was considered an “active” facility and was regulated under RCRA. The site has subsequently been referred to Superfund. Numerous drums of unknown chemicals were improperly stored. An abandoned laboratory with numerous chemicals remained onsite. Tanks were leaking unknown contents. Deteriorated asbestos hung from vessels and littered the ground. The DEQ requested assistance from EPA’s removal section to

address the immediate problems, based on an imminent threat to the health and safety of the community. EPA is currently conducting an Emergency Response at the site. Significant cleanup has been accomplished this year. The Emergency Removal has already removed the laboratory chemicals and the drums at the facility. The site is now fenced and the refinery superstructure has been taken down. Almost all of the tanks in the tank farm have been emptied and removed. The DEQ and EPA will continue to work closely together on this project.



*Cutting up a tank at ORC*



*ORC Refinery during demolition*



*Explosives were used to bring down the Cat Cracker at ORC*



## Tar Creek NPL - Superfund

Ottawa County  
DEQ Contacts:  
David Cates  
(405) 702-5124,  
Dennis Datin  
(405) 702-5125  
Mary Jane Calvey  
(405) 702-5157

Tar Creek is Oklahoma's largest and most challenging Superfund site. The Oklahoma portion of the former Tri-State Mining District encompasses more than 40 square miles, five towns, and an entire watershed in far northeastern Oklahoma.

Extensive lead and zinc mining and ore processing in the area left tons of mine waste in huge piles (called chat) and flotation ponds that contain high concentrations of lead and zinc and other heavy metals. The shallow aquifer had always contained the minerals from the surrounding formations. But when the mines refilled after the mining and pumping ceased, seeps of metal laden, sometimes acidic mine water further contaminated the streams in the area. This led to contaminating the shallow ground water and surface water with iron, sulfate, zinc, lead and cadmium throughout the Tar Creek area. The area is also covered with abandoned mine shafts

and subsidence features that pose safety hazards to the citizens in the area.

Exposure to lead from the mining wastes has resulted in elevated blood lead levels in children. Early actions at this site were focused on mine discharges to surface water, but as information became available on the effects of lead to area children, EPA began work to remove lead from residential yards and other high access areas.

The site is divided into four different operable units, which are described below.

### Operable Unit 1: Ground Water and Surface Water in Tar Creek

Status: Operations and Maintenance

Remedial action began in 1986 with plugging of ground water wells and the construction of dikes to divert mine discharges from Tar Creek and to reduce inflow of surface water into the mines. The diversion dikes did not function as intended and mine discharges continue unabated. DEQ has been the lead on monitoring of public water supply wells and other monitoring wells in the Roubidoux aquifer to assess whether the shallow contamination is impacting the deeper aquifer. Several deep wells that could serve as conduits between the two aquifers are being plugged.

*Continued on next page*



*Iron stained creek*

## Operable Unit 2: Residential Property

Status: Remedial Action

Removal of contaminated residential



*Commerce*

soils began in 1997 and continues today. To date, the EPA has cleaned up 2,053 residential properties with approximately 300 additional properties remaining. The cleanup consists of removing soil contaminated above 499 mg/kg lead and replacing it with clean soil. An aggressive health education campaign headed by the Ottawa County Health Department on how to reduce exposure to lead is also part of the remedial action and is ongoing. Since the start of this work, the percentage of elevated blood lead levels in children in Ottawa County has dropped from 33 percent to three percent.

## Operable Unit 3: Drum Removal in Cardin

Status: Complete

## Operable Unit 4: Nonresidential Properties

Status: Remedial Investigation/  
Feasibility Study

The EPA is working with two mining companies and the federal Department of Interior as potential responsible parties for the investigation and feasibility study of the mine wastes. The plan is to sample chat piles, millponds and soils to assess risk to human health and the environment and to formulate alternatives for cleanup. This work began in 2004.

## Oklahoma Plan for Tar Creek:

This plan is a multi-faceted, multi-agency strategy to resolve the environmental legacy of mining in the site's perimeter and to mitigate immediate hazards site-wide. Design and implementation of the projects began in 2004.

Projects include:

- passive treatment of metal-laden surface water
- removing chat from selected streams
- using chat in asphalt road paving
- reclamation and restoration of mine impacted lands
- reducing mine hazards by plugging mine shafts and filling subsidences
- monitoring remediation
- stakeholder involvement

The goals of this plan, over the next three to five years, are to:

- improve surface water quality
- reduce exposure to lead dust
- attenuate mine hazards
- reclaim land

While this plan addresses mostly perimeter areas, it will address mine shafts and other hazards sitewide. It is designed to integrate with other activities that are pending and underway at Tar Creek. The DEQ is implementing many of these projects and is actively coordinating work by other agencies.



*Riding the chat piles*



### Governor Henry's Relocation Buyout

The Oklahoma legislature set up a relocation trust authority headed by Rep. Larry Roberts for either buyout and or moving assistance for families in the Tar Creek Superfund area who have children under the age of seven. Scientific evidence shows that those children and developing fetuses are most at risk from exposure to lead. The appropriation for FY 05 included \$3,000,000 to buyout homeowners, provide rental assistance to renters and compensate landlords for rent they would not receive from rental properties up to one year. The people who receive this assistance have to agree to move out of the most impacted area. Properties can then be resold or re-rented but not to families with children. In addition, the city utilities and the school would be compensated for lost revenue due to declining customer base for a period of up to 10 years. A private company will be contracted to do the appraisals and comparable valuations of properties.

### Tinker Air Force Base NPL Site - Superfund

Oklahoma City, Del City,  
Midwest City  
DEQ Contacts:  
Hal Cantwell  
(405) 702-5139,  
Robert Replogle  
(405) 702-5131

This aircraft maintenance and rebuilding facility has a long history of industrial use and groundwater contamination. Organic solvents and chromium have contaminated the Garber-Wellington Aquifer. The Superfund cleanup is focused on three operable units: Building 3001, Soldier Creek Surface Water and Sediments and Soldier Creek/Industrial Waste Treatment Plant Ground water.

### Building 3001 Operable Unit:

Status: Remedial Action

A ground water remediation project started in 1990 using a pump and treat system for contaminated ground water. Tinker Air Force Base has suspended the pump and treat operations for one year to study its effectiveness and to investigate additional remedial alternatives. This shut down period will allow the aquifers to recharge so Tinker and DEQ can re-evaluate the aquifers in a static state.

If any evidence of migration occurs during this temporary shutdown, then Tinker will immediately restart the pump and treat operation.

### Soldier Creek Surface Water & Sediments Operable Unit:

Status: Remedial Action

The 1993 Remedial Investigation and Feasibility Study Risk Assessment for Soldier Creek showed that water and sediment contamination levels were below concern for human health risks. The remedy requires periodic monitoring of water in the creek and its sediments. The monitoring of the creek will continue for a number of years. The DEQ recently approved a five-year review that showed the selected remedy has adequately maintained protection of human health and the environment.

### Soldier Creek /IWTP Ground Water Operable Unit:

Status: Proposed Plan

The DEQ, Tinker Air Force Base and EPA are working closely to select a remedy to address metals and organic chemicals contamination in groundwater beneath the northeast quadrant of the Base. The remedy should be chosen in 2005.



## Tulsa Fuel & Manufacturing NPL - Superfund

Collinsville, Tulsa County

DEQ Contact:

George Thomas

(405) 702-5126

Status:

Remedial Investigation /Feasibility

Study

This 50-acre former horizontal retort zinc smelter operated from 1914 until 1925. Preliminary investigations identified arsenic, cadmium, lead and zinc as site contaminants. The site was placed on the National Priorities List in 1999.

In 2004, at DEQ's request, an emer-

gency response was taken by EPA to erect a perimeter fence to limit access to the contaminants at the site. The area is frequented by fishermen, hunters and berry-pickers. DEQ obtained samples of blackberries from the site for later evaluation of the potential for these plants to uptake metals from the site.

DEQ is leading the investigation by hiring a consultant to perform site-wide sampling to assess risks and to develop alternatives for cleanup based on the results. The sampling should begin in early 2005. The DEQ will hold periodic public meetings to keep the community informed of work and progress at the site.

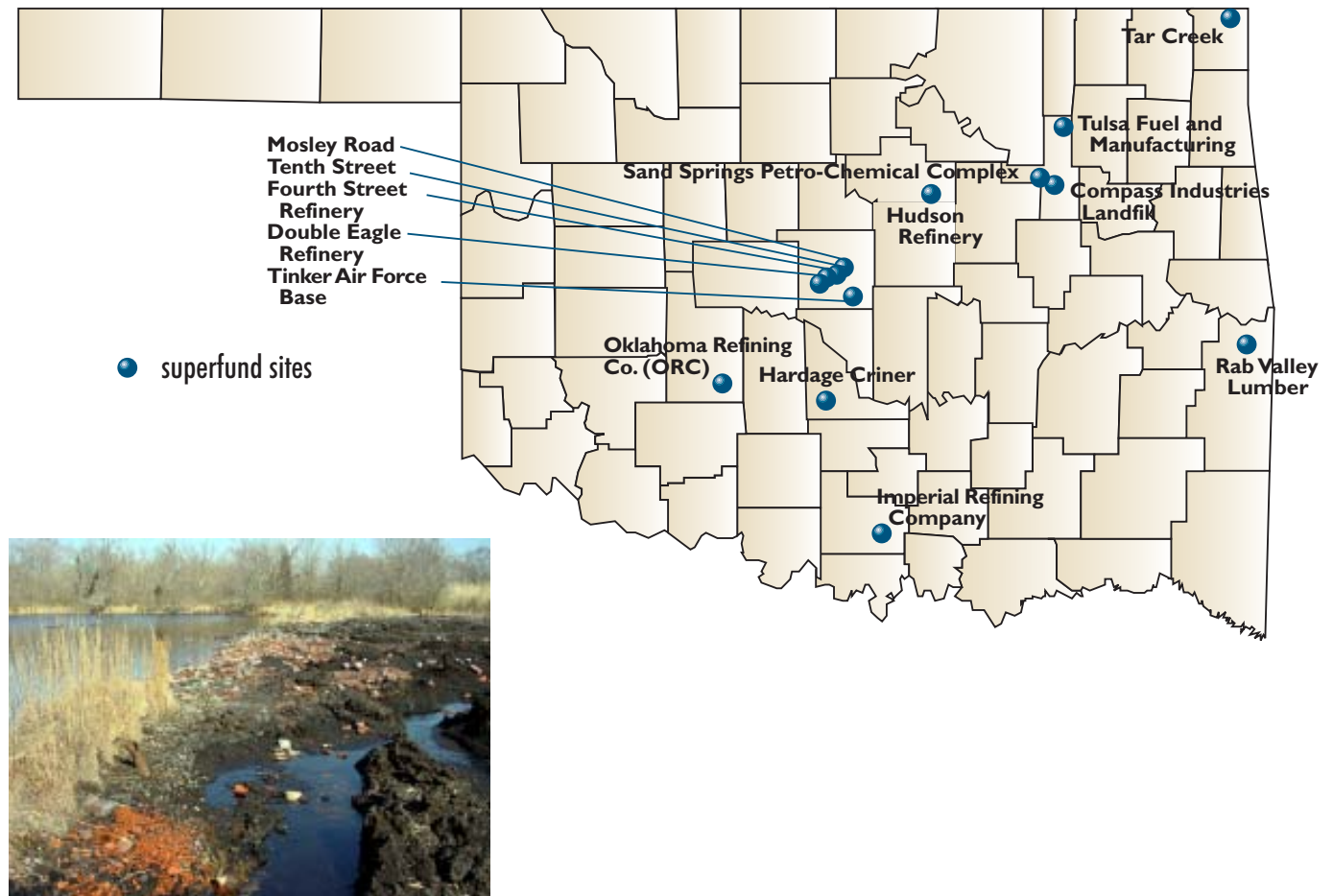


*Dam at Tulsa Fuel site made of condensers*



*Smelter waste at Tulsa Fuel site*

## NPL Superfund Sites



### Other sites in the Superfund program

Site	Location	Contact	Status
Compass Industries Landfill	Berryhill, Tulsa Co.	Hal Cantwell (405) 702-5139	Operation & Maintenance
Hardage/Criner	McClain Co.	Hal Cantwell (405) 702-5139	Operation & Maintenance
Mosley Road Landfill	Oklahoma City	Dennis Datin (405) 702-5125	Remedial Action
Rab Valley Lumber EPA Removal/AOC	Panama, LeFlore Co.	Karen Khalafian (405) 702-5122	Feasibility Study
Sand Springs Petrochemical Complex	Sand Springs, Tulsa Co.	Dennis Datin (405) 702-5125	Operation & Maintenance
Tenth Street	Oklahoma City	Dennis Datin (405) 702-5125	Operation & Maintenance

# Oil and Mining Land Restoration Program

DEQ Contact: Fenton Rood (405) 702-5159

Provisions in a 1995 amendment to the Solid Waste Management Act directed the DEQ to work with the Conservation Commission, the Corporation Commission, and the Oklahoma Energy Resources Board to use materials recovered from solid waste projects to restore lands damaged by oil production and mining activities.

This collaboration of agencies is in its ninth year of a successful partnership, with each agency providing expertise in different areas: the Oklahoma Energy Resources Board will typically remove old oil-field equipment and structures and install any needed erosion control structures; the Corporation Commission provides expertise in the remediation of contaminated soils; the Conservation District specializes in restoring the productivity of damaged soil using amendments; and the DEQ facilitates the identification and beneficial reuse of organic material, most often sewage sludge and wood chips.

The reuse of organic material diverts it from disposal at a landfill and helps restore soil and lands to productive uses. The table shows acres under restoration in 2004 and the map shows the locations of these projects.

## Solid Waste Diverted from Disposal for Recycling

organic wastes  
yard waste  
paper (50% of material discarded every day)  
sewage sludge  
wood chips

## Land Restoration

FY 2004

Acres in planning	450
Acres treated	115
Acres in follow-up	300

## Restoration and Reclamation Sites





## Eliminating Small Community Blight

Small communities throughout Oklahoma are struggling with the problem of dilapidated structures. Many local governments have been unable to remove this

blight due to the high cost of disposal.

The Solid Waste Management Act provides relief by eliminating the need for solid waste permits on projects approved by both the DEQ and the appropriate local conservation district. The projects use suitable portions of the structures to restore and reclaim Oklahoma lands.

The DEQ works with local communities and conservation districts to identify dilapidated buildings, ensure that they are free of toxic hazards and develop a plan for using the demolition material to restore scarred land. For many localities this has sufficiently reduced their costs, making blight removal an affordable enterprise.

### List of Upcoming Projects for Land Reclamation 2005

Hugo	Dustin	Weatherford
Haskell	Altus	Hollis
Elk City	Miami	Clinton
Weleetka	Gage	Red River Co-op
Nowata	Muskogee	Locust Grove
Apache	Henryetta	Broken Bow
El Reno	Hominy	Mustang School
Stigler	Watonga	Maysville
Coalgate	Frederick	





# Waste Tires

DEQ Contact: Jon Roberts (405) 702-5184

The Oklahoma Waste Tire Recycling Act was created in 1989 to clean up historical tire dumps and to prevent further illegal dumping by providing a monetary incentive to promote proper disposal. On average, Oklahoma generates about one waste tire per person per year. But, despite recycling options, illegal dumping continues.

Waste tire facilities meeting the requirements of the Waste Tire Recycling Act are eligible to receive compensation from the Waste Tire Recycling Indemnity Fund.

For processing whole tires, reimbursement is \$49 per ton of processed tire material. Waste tire facilities are entitled to an additional \$48 per ton if they collect waste tires.

River Erosion projects permitted by the Corp of Engineers can be reimbursed at a rate of \$2.80 per tire for truck tires and \$0.80 per tire for regular tires

## Sites Cleaned Up

In 2003 (most recent year with complete data), remediation work at 35 dump sites was under way. Remediation efforts resulted in removing 125,416 waste tires and the clean up of five sites. Fifty community-wide clean up events were held resulting in the removal of 84,139 waste tires.

Waste tires, when burned, are an excellent source of energy. Nearly 3.4 million waste tires are collected, processed, and marketed by permitted waste tire processors every year. Until recently, the major, but often unstable, markets for processed tires were for use in civil engineering applications, as tire-derived fuel,

and as ground rubber used for feedstock to make new products.

Engineering uses of the state's waste tires has declined significantly over the past few years, and the ground rubber feedstock market, is a relatively small portion of the overall Oklahoma market picture.

The tire-derived fuel market has increased significantly in Oklahoma over the past two years, due to interest from two major cement kilns in the state that burn whole tires for supplemental fuel.

## New Facility Permitted

December 2004, the Bristow Rubber Recycling began operating a Waste Tire Processing Facility. The facility plans to convert 2.5 million waste tires annually, via a cryogenic process, into crumb rubber. U.S. markets for the facility's crumb rubber include playground material, surfacing material for athletic fields, and feedstock for molded products.

## Waste Tire Indemnity Fund

As of December of 2002, money entering the Waste Tire Indemnity Fund (Fund) monthly, for allocation to end users, was insufficient, resulting in monthly reimbursements to end users to be prorated. To date, insufficient monthly funding requires that the prorated schedule be continued indefinitely. As of January of 2003, the same scenario occurred with monthly funding allocated to the waste tire processors. To date, insufficient funding requires that the waste tire processors' prorated reimbursement schedule be continued indefinitely.

### Tire dump and community-wide cleanup information through September 2004:

- Number of tire dumps being cleaned up: 33 dumps
- Number of tires cleaned up from those dumps: 179,768 waste tires
- Number of dumps completely cleaned up January – September, 2004: 26 dumps
- Number of Community-wide cleanup events: 41 cleanup events
- Number of tires cleaned up from these cleanup events: 31,754 waste tires



*Tires waiting to be recycled*

The two major cement kilns in Oklahoma that burn waste tires as a supplemental fuel are Holcim (US) Inc., in Ada, and Lafarge North America in Tulsa. In 2003 Holcim consumed nearly 2.48 million waste tires, and Lafarge burned nearly 500,000 waste tires.

## Cement Kilns Find Fuel In Oklahoma's Waste Tires

While not all of these tires were Oklahoma waste tires, the vast majority were, showing that these two cement kilns have the capacity to burn nearly 2.98 million tires annually, or 88 percent of the waste tires generated annually in the state.

Waste tires are delivered to the cement kilns by permitted waste tires processors, who collect tires from all 77 counties. At the cement plant, the tires are conveyed up to the large rotating cement kilns, and deposited into the kiln which is heated to over 2600° F.

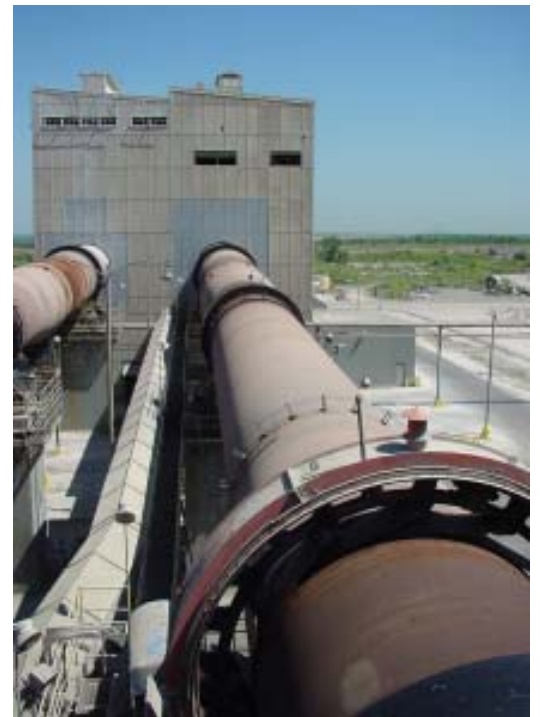
The public's perception of emissions released during the burning of tires for fuel has not always been positive, but an EPA report suggests the emissions from burning tires in a cement kiln are minimal. After the tires are burned, there is no ash or residue to dispose of because all of the components of the tire are either destroyed, combined into the super-heated raw ingredient mix that makes up the cement or captured in the air pollution control devices.

An environmental partnership has emerged between the state and the cement kilns. Oklahoma needs to properly manage several million waste tires annually, and the cement kilns need the waste tires for use as

supplemental fuel. Through Oklahoma's waste tire management program, a steady stream of waste tires are delivered to the kilns, and the kilns in turn properly dispose of the tires.



*Waste tire trailer delivery system*

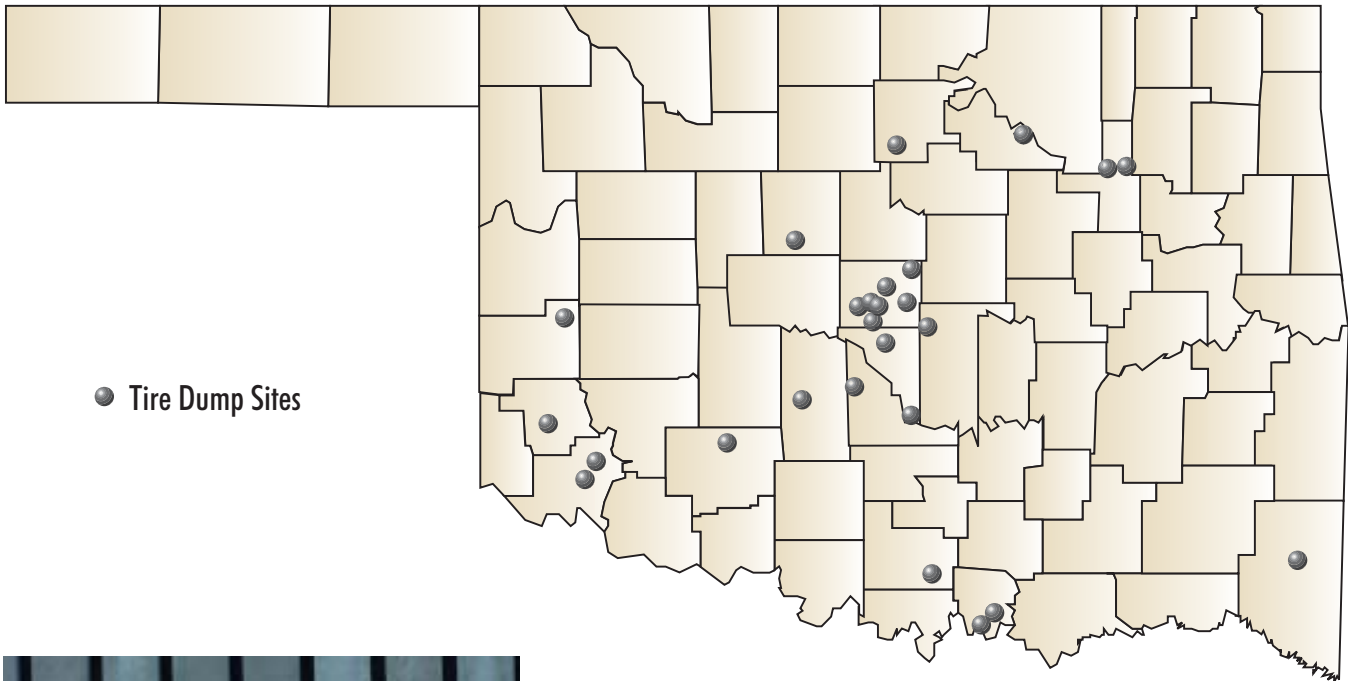


*Large set of rotating kilns at Lafarge*

Waste Tires Map

Locations of tire clean up activity in 2003

Tire Dump Sites



Waste tires on the conveyor belt



Waste tires being hoisted up to the kiln



Waste tire enters the kiln at Holcim



Oklahoma Department of Environmental Quality  
Land Protection Division

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